UNITED STATES GOVERNMENT
memorandum

U.S. FISH AND WILDLIFE SERVICE

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TO: Jackie Prince, USEPA, Boston, MA

FROM: Gene Crouch, Concord, NH
Thru: Gordon Beckett, Supervisor GEB

DATE: DEC 17 1984

SUBJECT: Habitat Evaluation Procedure (HEP) Analysis of Superfund Clean Up of New Bedford Harbor, Massachusetts.

In response to recent conversations with you and the Corps, I have compiled some information to explain what a HEP is, what it can tell us, what tools are available and how it should be done. This is a brief description, we can go into more detail at the December 19 meeting at your office. I also have a tape and slide presentation on HEP that I will bring to the meeting.

HEP is a stepwise process that can be used to document the quality and quantity of habitat available to selected species. It may be used for: 1) Wildlife habitat assessments, including both baseline and future conditions; 2) Trade-off analyses and; 3) Compensation analyses. The basic steps of a HEP are displayed in figure 1-1.

The first step is to determine the applicability of HEP to the planning process. Since the baseline and alternative conditions are measurable, I believe that HEP is appropriate for this case.

Given that HEP is applicable, and will be used, the next step is to define study limits. This step includes the following preassessment activities:

1) Form an assessment team.

   For the results of a HEP to be credible, a team approach should be used. All participants would be responsible for the results. I recommend that the team include a representative from the USEPA, USFWS, NMFS, Corps, MA DMF or some other appropriate state agency. The City of New Bedford should be invited to either participate as a team member or as an observer, whichever they prefer.

2) Delineate study boundaries.

   Boundaries should include the project site, all disposal alternative sites and considerations of impact beyond New Bedford Harbor (ie., Buzzards Bay).

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1.10 GUIDELINES FOR PREASSESSMENT ACTIVITIES

If it is determined that the HEP process is applicable to the habitat assessment being considered (see 102 ESM 2.0), then the activities highlighted in Figure 1.1 should be completed before the baseline or impact assessment begins.

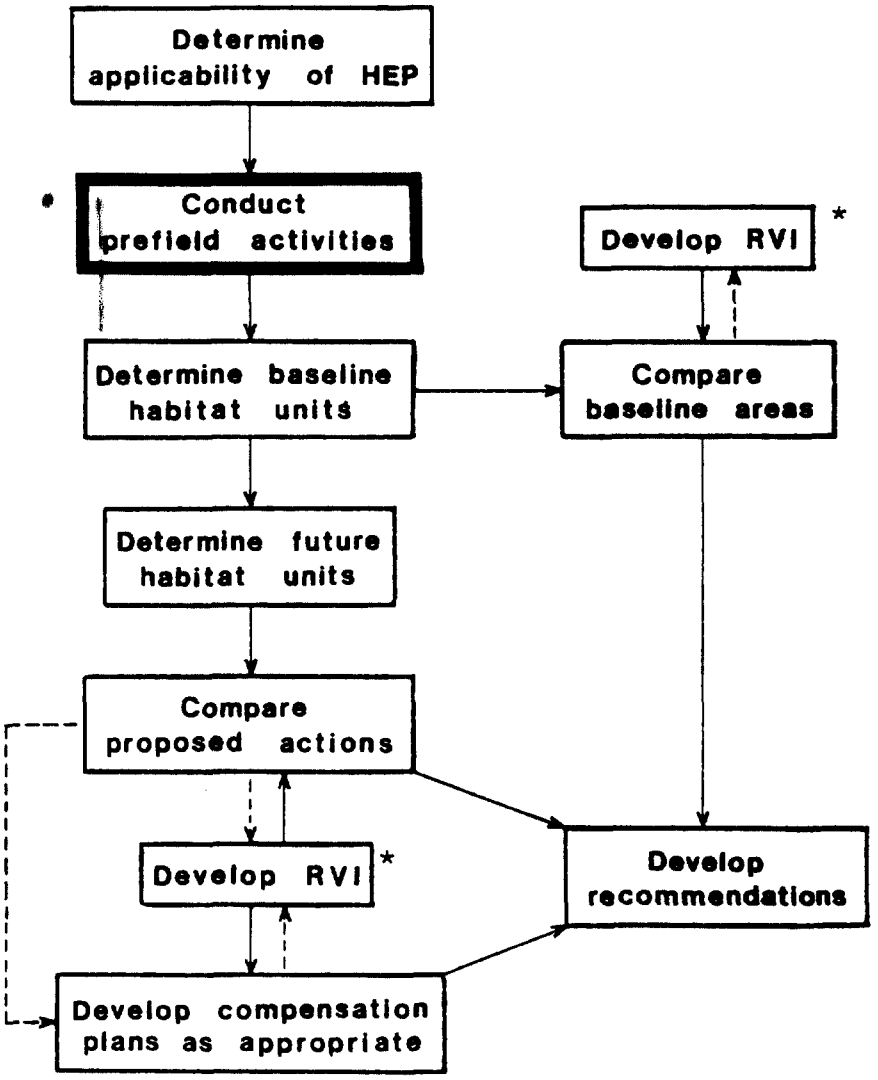

Figure 1.1. Flow diagram of HEP process, emphasizing preassessment activities.

*Optional step.

3) Assemble available data.

Compile data from available previous studies, including USEPA, Corps, 301(h), individual private project data, etc.

4) Delineate cover types.

Identify the different habitats or substrate types within the study area.

5) Select evaluation species.

The species selected are the basis of a HEP. The evaluation could be based on a single species, a representative group or GUILD, a life stage or a species life requisite (nesting sites, feeding, etc.). Note that HEP will be applicable only to the species that are used in the analysis. Therefore species selection is important to characterize the affected habitat. Selection could be made from two major groups: 1) species with high public intrest or economic value; or 2) species that represent an ecological perspective of the area.

a) Each species used must be represented as a model. These are called Habitat Suitability Index models or HSI models. Appropriate published HSI models are:

Coastal Stocks of Striped Bass
Alewife and Blueback Herring
Mercinaria mercinaria (Hard clam or Quohog)
American Shad

As you can see there is a paucity of appropriate species HSI models for northeast estuarine habitats. However, with some effort, we could develop a model for almost any species we need.

b) Develop HSI models by determining the necessary life requisites for each species. We can develop models we need by identifing variables that describe optimum habitat. I suggest that we consider:

1) American lobster
2) Green crab
3) Winter flounder
4) Fundulus (minnows)
5) Another infaunal or epifaunal species, such as a polychaete or a snail.

This species selection and modeling will require more discussion and consultation with species experts.

6) Select Inventory Techniques.
7) Select Sampling Design.

These two last steps would depend upon what data need to be collected. For example, the habitat variables needed for river herring are:

Substrate characteristics
Mean daily water temperature
Number of zooplankton/liter
Mean salinity during spring and summer
Mean surface water temperature

The above measurements would have to be taken and compiled to generate a HSI for river herring. Some of these parameters may be used in other species' HSI models. Once the species are selected, a list of variables can be generated.

A HEP assessment only identifies potential habitat value for the selected species. It does not take into account pollution that degrades habitat value, as in the case of New Bedford Harbor. We may, however, want to include a degradation factor due to the PCB contamination. This can be done by using a Relative Value Index or RVI. It is an optional step but may enable us to more correctly represent the existing or future habitat values.

This then is a general outline of what a HEP is all about. It can be a lenghty and costly process due to the field sampling that is required. The complete HEP process is in the USFWS Ecological Services Manual, ESM Parts 101, 102 and 103. If you have any questions about HEP, feel free to call Ken Carr or me at FTS 834-4797. Ken will be attending the meeting on December 19 with me.

Gene Crouch